

NJDOT Bureau of Research  
**QUARTERLY PROGRESS REPORT**

This page summarizes all of the open tasks under the Cambridge Systematics contract with the research bureau.

| <b>Task</b>  | <b>Project Budget</b> | <b>Budget Expended</b> | <b>% of Budget Expended</b> | <b>% of Work Complete</b> |
|--|-----------------------|------------------------|-----------------------------|---------------------------|
| TO#21 – Climate Change Adaptation Guidebook                        | \$19,900.00           | \$18,180               | 91%                         | 91%                       |
| TO#22 – Worker Safety Issues of WiFi Devices                       | \$14,740.00           | \$14,740.00            | 100%                        | 100%                      |
| TO#23 – Steel Erection Out of Plumb                                | \$75,010.00           | \$57,601.00            | 77%                         | 77%                       |
| TO #24 – Criteria for Multimodal Rehabilitation versus Maintenance | \$52,220.00           | \$37,493.00            | 72%                         | 72%                       |
| TO #25 – Channel Usage Research and Analysis                       | \$112,760.00          | \$80,068.20            | 71%                         | 71%                       |

NJDOT Bureau of Research  
**QUARTERLY PROGRESS REPORT**

|  |   |  |  |
|--|---|--|--|
| Project Title:   | Climate Change Adaptation Guidebook                               |  |  |
| RFP NUMBER: 7830809  | NJDOT RESEARCH PROJECT MANAGER:<br>Stefanie Potapa                |  |  |
| TASK ORDER NUMBER: 21  | PRINCIPAL INVESTIGATOR:<br>Josh DeFlorio, Hugh Louch              |  |  |
| Project Starting Date: 7/26/2013<br>Project Ending Date: 1/31/2014 | Period Starting Date: 10/1/2013<br>Period Ending Date: 12/31/2013 |  |  |

| Task                    | % of Total Project Budget | Total Budget | % of Task This Quarter | Cost This Quarter | % of Task to Date | Total Cost to Date |
|-------------------------|---------------------------|--------------|------------------------|-------------------|-------------------|--------------------|
| 1. Preparing for Action | 76%                       | \$15,040     | 19%                    | \$ 2,900          | 94%               | \$ 14,180          |
| 2. Final Report         | 24%                       | \$4,860      | 55%                    | \$ 2,688          | 82%               | \$ 4,000           |
| TOTAL                   | 100%                      | \$19,900     | 28%                    | \$ 5,588          | 91%               | \$ 18,180          |

**Project Objectives:**

The objectives of this project are to:

1. Construct suggested agency-wide approaches and process flows for climate-change and extreme weather risk reduction; and follow up interviews with selected personnel to further explore opportunities for integrating climate risk into current activities (as needed).
2. Develop a Final Report to summarize results and recommendations of Task 20 and Task 21.

**Project Abstract:**

For the New Jersey Department of Transportation (DOT), Cambridge Systematics is providing additional research support for work begun under the previous contract through the optional task (identified as 3b) set out in that scope of work. The specific purpose of Task 21 is to develop context-specific recommendations for factoring climate change into key decision-making processes at NJDOT.

**1. Progress this Quarter by Task**

Task 1: Preparing for Action

- Development of report materials and sections, based on NJDOT feedback

Task 2: Final Report

- Submit draft report (projected for the week of 12/30)
- Project management activities (including Q3 quarterly meeting)

## **2. Proposed activities for next quarter by task**

Task 1:

- Incorporate NJDOT feedback into final deliverables, as necessary

Task 2:

- Submit final report
- Participate in Q4 quarterly meeting

## **3. List of deliverables provided in this quarter by task (product date):**

- Draft Final Report
- Final Report will be submitted following receipt of client comments

## **4. Progress on Implementation and Training Activities:**

- No work on implementation or training in this period

## **5. Problems/Proposed Solutions:**

- No problems to report during this period.

|                                    |             |
|------------------------------------|-------------|
| Total Project Budget               | \$19,900.00 |
| <b>Contract Amount:</b>            | \$19,900.00 |
| Total Project Expenditure to date  | \$18,810.00 |
| % of Total Project Budget Expended | 91%         |

NJDOT Bureau of Research  
**QUARTERLY PROGRESS REPORT**

|  |  |  |  |
|--|--|--|--|
| Project Title:   | Worker Safety Issues of WiFi Devices                               |  |  |
| RFP NUMBER: 7830811  | NJDOT RESEARCH PROJECT MANAGER:<br>Ed Kondrath                     |  |  |
| TASK ORDER NUMBER: 22  | PRINCIPAL INVESTIGATOR:<br>Christopher Titze                       |  |  |
| Project Starting Date: 07/26/2013<br>Project Ending Date: 10/25/2013 | Period Starting Date: 10/01/2013<br>Period Ending Date: 12/31/2013 |  |  |

| Task                 | % of<br>Total<br>Project<br>Budget | Total<br>Budget | % of<br>Task<br>This<br>Quarter | Cost This<br>Quarter | % of<br>Task to<br>Date | Total Cost<br>to Date |
|----------------------|------------------------------------|-----------------|---------------------------------|----------------------|-------------------------|-----------------------|
| 1. Literature Review | 55%                                | \$8,100         | 0%                              | \$0                  | 100%                    | \$8,100               |
| 2. Final Report      | 45%                                | \$6,640         | 63%                             | \$4,183              | 100%                    | \$6,640               |
| TOTAL                | 100%                               | \$14,740        | 28%                             | \$4,183              | 100%                    | \$14,740              |

**Project Objectives:**

The objectives of this project are to conduct a literature review of studies to gather information on the health and safety effects related to the use of various Wi-Fi devices and RFEMF exposure. This review will also include background information on Wi-Fi devices more generally, what they are and how they are used in transportation. A review of findings and an outline of potential concerns, issues, and other information relevant to worker health and safety will be created upon the completion of the project.

**Project Abstract:**

Electromagnetic fields are present everywhere. Besides natural sources, man-made sources include X-rays, power sockets, and cellular phones. The World Health Organization has classified radiofrequency electromagnetic radiation (RF-EMF) as a possible group 2b carcinogen. This group consists of possible carcinogens that carry limited evidence of risk but need to be monitored. The exposure of the general public to this from cellular phones, wireless networks, radio broadcasting, etc. has been long discussed and studied. NJDOT presently uses Bluetooth devices that emit RF-EMF. This research will address the effect this exposure on workers and any potential concerns especially as they relate to the transportation sector.

## 1. Progress this Quarter by Task

Task 1:

- None.

Task 2:

- Completed the development of report materials detailing literature review findings, outlining potential concerns and issues relevant to worker health and safety, describing Bluetooth device(s) purchased by NJDOT, other DOT experiences, and the types of activities workers partake in that may result in exposure.

## 2. Proposed activities for next quarter by task

Task 1:

- Project completed.

Task 2:

- Project completed.

## 3. List of deliverables provided in this quarter by task (product date):

Task 1:

- None

Task 2:

- Draft Final Report
- Final Report
- Draft Technical Brief
- Final Technical Brief

## 4. Progress on Implementation and Training Activities:

- No work on implementation or training in this period

## 5. Problems/Proposed Solutions:

- No problems to report during this period.

|                                    |             |
|------------------------------------|-------------|
| Total Project Budget               | \$14,740.00 |
| <b>Contract Amount:</b>            | \$14,740.00 |
| Total Project Expenditure to date  | \$14,740.00 |
| % of Total Project Budget Expended | 100%        |

NJDOT Bureau of Research  
**QUARTERLY PROGRESS REPORT**

|   |  |  |  |
|---|--|--|--|
| Project Title:  | Steel Erection Out of Plumb  |  |  |
| RFP NUMBER:<br>7830815  | NJDOT RESEARCH PROJECT MANAGER:<br>Giri Venkiteela                 |  |  |
| TASK ORDER NUMBER: 23   | PRINCIPAL INVESTIGATOR:<br>Hugh Louch                              |  |  |
| Project Starting Date: 7/26/2013<br>Project Ending Date: 10/25/2011 | Period Starting Date: 10/01/2013<br>Period Ending Date: 12/31/2013 |  |  |

| Task   | % of Total Project Budget | Total Budget | % of Task This Quarter | Cost This Quarter | % of Task to Date | Total Cost to Date |
|--|---------------------------|--------------|------------------------|-------------------|-------------------|--------------------|
| 1. Kick-off meeting                                      | 5.6%                      | \$4,220      | 0%                     | \$0               | 100%              | \$4,220            |
| 2. Literature Review & Subject Matter Expert (SME) Input | 37.0%                     | \$27,780     | 60%                    | \$16,668          | 95%               | \$26,486           |
| 3. Evaluation Findings and Recommendations               | 47.8%                     | \$35,860     | 75%                    | \$26,895          | 75%               | \$26,895           |
| 4. Final Report  | 9.5%                      | \$7,150      | 0%                     | \$0               | 0%                | \$0                |
| TOTAL  | 100%                      | \$ 75,010    | 58%                    | \$43,563          | 77%               | \$57,601           |

**Project Objectives:**

The purpose of this task will be to develop recommendations for construction engineering guidance based on a focused review of relevant DOT/University research papers, reports, presentations, available DOT Design and Construction guidelines, AASHTO LRFD Specifications, National Guidelines for Steel Girder Bridge Analysis and Design for Constructability, and NCHRP/TRB reports, input from subject matter experts related to constructability and steel erection which would include GPI senior construction engineers, fabricators, erectors and contractors, and review of recent GPI bridge project design plans and submitted shop and erection drawings which involved the design and construction of heavily skewed and/or curved girder bridges.

The final deliverable will be a report which will summarize the literature review, subject matter expert input, methods used and guidance provided on similar bridge construction projects, and recommendations for specific guidelines for NJDOT review and implementation.

**Project Abstract:**

There is currently no specific or consistent guidance on how designers and contractors are to address out-of-plumb girders associated with curved and skewed steel girder bridges as part of design and during construction.

## 1. Progress this Quarter by Task

### Task 2: Literature Review & Subject Matter Expert (SME) Input

- Completed a “Literature Review Key Summaries” document.
- Received comments from NJDOT staff
- Incorporated comments and updated literature review

### Task 3: Evaluation, Findings and Recommendations

- Developed report outline
- Developed preliminary recommendations

## 2. Proposed activities for next quarter by task

### Task 1: Kick Off Meeting

- Work completed. No further work expected.

### Task 2: Literature Review & Subject Matter Expert (SME) Input

- Finalize literature review

### Task 3: Evaluation, Findings and Recommendations

- Review findings and recommendations with NJDOT staff
- Finalize findings and recommendations

### Task 4: Final Report

- Develop final report and technical brief

## 3. List of deliverables provided in this quarter by task (product date):

- Draft findings and recommendations

## 4. Progress on Implementation and Training Activities:

- No work on implementation or training in this period.

## 5. Problems/Proposed Solutions:

- No problems to report during this period.

|                                    |                    |
|------------------------------------|--------------------|
| Total Project Budget               | \$75,010.00        |
| <b>Contract Amount:</b>            | <b>\$75,010.00</b> |
| Total Project Expenditure to date  | \$57,601.00        |
| % of Total Project Budget Expended | 77%                |

NJDOT Bureau of Research  
**QUARTERLY PROGRESS REPORT**

|  |  |  |
|--|--|--|
| Project Title:   | Criteria for Multimodal Rehabilitation versus Maintenance          |  |
| RFP NUMBER: 7841209  | NJDOT RESEARCH PROJECT MANAGER:<br>Daniel LiSanti                  |  |
| TASK ORDER NUMBER: 24  | PRINCIPAL INVESTIGATOR:<br>Christopher Lamm                        |  |
| Project Starting Date: 8/16/2013<br>Project Ending Date: 2/15/2014 | Period Starting Date: 10/01/2013<br>Period Ending Date: 12/31/2013 |  |

| Task  | % of Total Project Budget | Total Budget | % of Task This Quarter | Cost This Quarter | % of Task to Date | Total Cost to Date |
|---|---------------------------|--------------|------------------------|-------------------|-------------------|--------------------|
| 1. Literature Review and Interviews                     | 42%                       | \$21,560     | 65%                    | \$ 13,971         | 145%              | \$ 31,361          |
| 2. Recommended Threshold Criteria for Multimodal Grants | 39%                       | \$20,440     | 30%                    | \$ 6,132          | 30%               | \$ 6,132           |
| 3. Final Report   | 19%                       | 10,220       | 0%                     | \$ 0              | 0%                | \$ 0               |
| TOTAL   | 100%                      | \$52,220.00  | 38%                    | \$ 20,103         | 72%               | \$ 37,493          |

**Project Objectives:**

The purpose of this project will be to help the Bureau of Multimodal Grants and Programs to resolve conflicting information regarding the types of projects that qualify for grants supported by the New Jersey Transportation Trust Fund (TTF). Specifically, the threshold between “routine (or scheduled) maintenance,” which the TTF cannot support, and “rehabilitation” project, which can be supported by the TTF, appears to be inconsistent, according to the research problem posed. To resolve this conflict, this project aims to:

- Examine state-of-the-practice definitions for the terms “routine/scheduled maintenance,” “rehabilitation,” and “reconstruction,” based upon the body of transportation planning and engineering literature, laws and statutes of other states and federal agencies;
- Prepare recommended policy definitions of these terms for NJDOT to incorporate into office policy (and into rulemaking and legislation if necessary); and
- Develop recommended criteria for classifying candidate projects (or components of candidate projects) for the NJDOT Multi-Modal Grants program as maintenance, rehabilitation, or reconstruction; and

**Project Abstract:**

For the New Jersey Department of Transportation (DOT), Cambridge Systematics is researching state and Federal requirements, design guidelines, and best practices in order to determine the threshold between rail and aviation projects that are considered routine or



scheduled maintenance versus those that are better classified as rehabilitation projects. This effort is developing policy definitions that will be used to classify candidate projects for the New Jersey DOT Bureau of Multimodal Grants and Programs Rail Freight Assistance Program and Aeronautics Grants Program. Cambridge Systematics also is conducting reviews of literature, interviews with rail and aviation officials in Federal and state agencies, and a workshop with DOT staff.

### **1. Progress this Quarter by Task**

#### **Task 1:**

- CS and FHI conducted interviews with federal, New Jersey, other states, and private sector rail and aviation engineers, planners, and grants program administrators
- CS and FHI prepared a draft Task 1 technical memorandum summarizing the approach and findings of the literature review and interviews

#### **Task 2:**

- Using the Task 1 findings, CS and FHI began drafting “strawman” working definitions of the terms “maintenance” and “rehabilitation” for the aeronautics and rail grants programs, and a list of key issues and considerations, for use in an upcoming meeting with NJDOT.

### **2. Proposed activities for next quarter by task**

#### **Task 1:**

- CS and FHI will incorporate comments and requested edits to the Task 1 technical memorandum upon request from NJDOT

#### **Task 2:**

- CS and FHI will convene a working meeting with NJDOT to review Task 1 findings and review “strawman” working definitions of key terms and project categorization criteria;
- CS and FHI will submit a draft Task 2 Technical Memorandum to NJDOT for review and comments;
- CS and FHI will submit a final Task 2 Technical Memorandum to NJDOT for review and comments;

### **3. List of deliverables provided in this quarter by task (product date):**

- Task 1 Draft Technical Memorandum (12/31/2013)

### **4. Progress on Implementation and Training Activities:**

- No work on implementation or training in this period

### **5. Problems/Proposed Solutions:**

- No problems to report during this period.

|                         |                    |
|-------------------------|--------------------|
| Total Project Budget    | \$52,220.00        |
| <b>Contract Amount:</b> | <b>\$52,220.00</b> |

|                                    |             |
|------------------------------------|-------------|
| Total Project Expenditure to date  | \$37,493.00 |
| % of Total Project Budget Expended | 72%         |

NJDOT Bureau of Research  
**QUARTERLY PROGRESS REPORT**

|  |  |  |  |
|--|--|--|--|
| Project Title:   | Channel Usage Research and Analysis  |  |  |
| RFP NUMBER: 7841174  | NJDOT RESEARCH PROJECT MANAGER:<br>Giri Venkiteela                             |  |  |
| TASK ORDER NUMBER: 25  | PRINCIPAL INVESTIGATOR:<br>Brian ten Siethoff, Christopher Titze, David Wagner |  |  |
| Project Starting Date: 8/16/2013<br>Project Ending Date: 2/15/2013 | Period Starting Date: 10/01/2013<br>Period Ending Date: 12/31/2013             |  |  |

| Task   | % of Total Project Budget | Total Budget | % of Task This Quarter | Cost This Quarter | % of Task to Date | Total Cost to Date |
|--|---------------------------|--------------|------------------------|-------------------|-------------------|--------------------|
| 1. Literature Search   | 12%                       | \$14,020.00  | 5%                     | \$701.00          | 90%               | \$12,618.00        |
| 2. Evaluate and Screen Vessel Count and Classification Methodologies               | 8%                        | \$9,120.00   | 5%                     | \$456.00          | 90%               | \$8,208.00         |
| 3. Data Collection and Pilot Test of Vessel Count and Classification Methodologies | 64%                       | \$72,560.00  | 10%                    | \$7,256.00        | 80%               | \$58,048.00        |
| 4. Final Report  | 16%                       | \$17,060.00  | 7%                     | \$1,194.20        | 7%                | \$1,194.20         |
| TOTAL  | 100%                      | \$112,760.00 | 9%                     | \$9,607.20        | 71%               | \$80,068.20        |

**Project Objectives:**

The purpose of this task is to 1) Develop and implement a reliable, repeatable, and verifiable method or SOP (Standard Operating Procedure) to collect vessel count and classification information by time of day; 2) Test one or more approaches that could be applicable to a broader statewide effort to collect vessel count information utilizing the selected method on approximately 214 state channels within the state's Marine Transportation System; and 3) Collect channel usage and classification data on a representative sample of the 214 state channels using a variety of methodologies so that results can be compared and guidance can be provided for future data collection efforts.

**Project Abstract:**

New Jersey's state channels are critical to the quality of life and economies of the state's coastal communities. The channels provide access to marinas and docks, and they allow fishing vessels, charter boats, and other commercial traffic to access Federally-maintained waterways like major inlets to the Atlantic Ocean and the Atlantic Intracoastal Waterway. As an initial step in a broader effort to better understand how these channels are used and how the Department of Transportation can best allocate scarce resources to channel dredging and other maintenance activities, this project involves defining a standard operating

procedure for collecting data about the size and number of vessels using each of the 214 state-maintained channels in New Jersey.

## **1. Progress this Quarter by Task**

### **Task 1:**

- The consultant team began drafting a technical memorandum summarizing information gathered in literature search.

### **Task 2:**

- The consultant team began drafting a technical memorandum summarizing screening criteria for the evaluation of various vessel count and classification methodologies.

### **Task 3:**

- The consultant team performed an in-depth review of the findings from the field research and began categorizing the information by location into a data collection results database.
- The consultant team began modifying training materials to include actual photos of vessels observed in data collection effort.

### **Task 4:**

- The consultant discussed the outline for the final report with NJDOT staff at the quarterly meeting on October 9.
- The consultant team developed a final report outline.
- The consultant team began writing narrative sections of the final report.

## **2. Proposed activities for next quarter by task**

### **Task 1:**

- The consultant team will complete and submit technical memorandum summarizing information gathered in literature search.

### **Task 2:**

- The consultant team will complete and submit a technical memorandum summarizing screening criteria for the evaluation of various vessel count and classification methodologies.

### **Task 3:**

- The consultant team will complete all post-processing and examination of collected data.
- The consultant team will complete requested revision to the summary tables in the data collection result database. Specific modifications will include:
  - Re-formatting the summary tables (where available) to provide an at-a-glance count of vessels by category for each site;
  - Indicate the percentage split of personal vs. commercial vessels for each pilot area (where available);
  - Where available add basic descriptive statistics such as percent difference in the total count for the various alternative methodologies.

Task 4:

- The consultant team will prepare and submit a draft and final report based on the results of the literature search, methodology screening, pilot testing, and data collection and analysis.

**3. List of deliverables provided in this quarter by task (product date):**

Task 1:

- No deliverables this quarter.

Task 2:

- No deliverables this quarter.

Task 3:

- No deliverables this quarter.

Task 4:

- No deliverables this quarter.

**4. Progress on Implementation and Training Activities:**

- No work on implementation or training in this period

**5. Problems/Proposed Solutions:**

- No problems to report during this period.

|                                    |              |
|------------------------------------|--------------|
| Total Project Budget               | \$112,760.00 |
| <b>Contract Amount:</b>            | \$112,760.00 |
| Total Project Expenditure to date  | \$80,068.20  |
| % of Total Project Budget Expended | 71%          |